SOME AUSTRALASIAN MOSQUITOES (DIPTERA, CULICIDAE) OF THE SUBGENERA *PSEUDOSKUSEA* AND *NEOCULEX*.

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(Eight Text-figures.)

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Synopsis.

The type series of *Culex australis* Erichson is redescribed as *Aëdes* (*Pseudoskusea*) *australis* (Erichson), with which *Aëdes* (*Pseudoskusea*) *crucians* (Walker) and *Aëdes* (*Pseudoskusea*) *concolor* (Taylor) are regarded as synonymous. The type of *Aëdes* (*Pseudoskusea*) *cairnsensis* (Taylor) is shown to be a species of *Culex*. Both sexes, pupa and larva of *Culex* (*Neoculex*) *cheesmanae*, n. sp., from New Caledonia are described and figured, and the male terminalia of *Culex* (*Neoculex*) *tricuspis* Edwards figured. The male, pupa and larva of *Culex chaetoventralis* (Theobald) are described and figured for the first time; characters of the male show that this species should be placed in the subgenus *Neoculex*. The relationships of the various species are discussed.

Aëdes (Pseudoskusea) australis (Erichson).

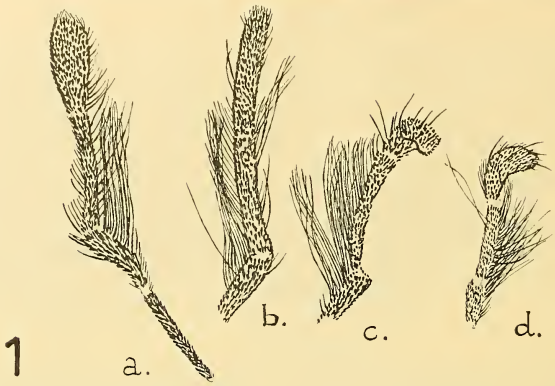
Culex australis Erichson, *Arch. Naturgesch.*, 8: 270, 1842. *Culex crucians* Walker, *Ins. Saund. Dipt.*, 1: 432, 1856. *Aëdes* (*Pseudoskusea*) *crucians* Edwards, *Bull. ent. Res.*, 14: 387, 1924. *Culicada tasmaniensis* Strickland, *Entomologist*, 44: 181, 1911. *Caenocephalus concolor* Taylor, *Trans. ent. Soc. Lond.*, 46: 700, 1914. *Aëdes* (*Pseudoskusea*) *concolor* Edwards, *Bull. ent. Res.*, 14: 387, 1924; 17: 113, 1926.

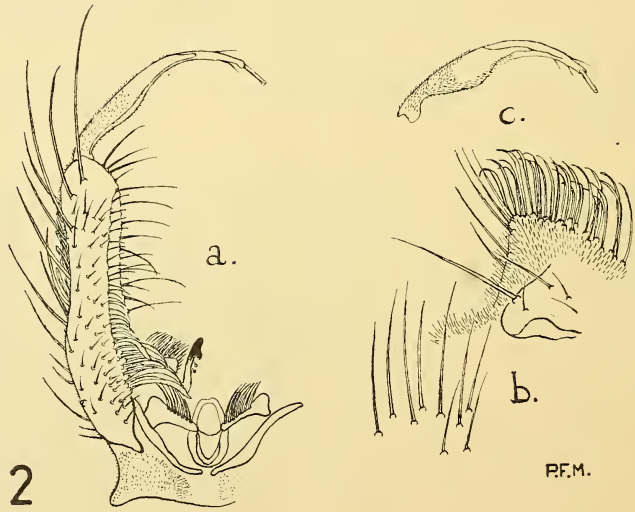
Theobald (1901) queried whether *C. crucians* might be a synonym of *C. australis*, but the specimens on which he based his redescription of *australis* were a different species (*Aëdes* (*Ochlerotatus*) *nivalis* Edwards, 1926). Edwards (1932) placed *C. australis* provisionally in the synonymy of *Tripteroides* (*Mimeteomyia*) *tasmaniensis* (Strickland) despite the fact that Erichson's description of the abdominal markings and the measurements of size which he gives are inconsistent with such an attribution. Through the kindness of Professor Dr. Fritz Peus one of us (P.F.M.) has been able to borrow the type series of three specimens left by Erichson in the Zoologisches Museum der Universitat in Berlin. It thus becomes possible to make a more convincing attribution and at the same time to describe and figure the type series and to mark lectotypes. Erichson's original description is brief and can be quoted in full. It runs as follows:

"245. *Culex australis.* Testaceus, thorace dorso fusco, abdomine nigro-fasciato, femoribus tibiisque summo apice pallidis. Long. corp. 3½., haustell. 2 lin.

"Antennae luteae. Haustellum sat elongatum, palpis maris hoc paulo brevioribus. Caput fusco-testaceum. Thorax dorso fuscus, lateribus et infra testaceus. Abdomen griseo-pilosum, segmentis basi pallidis, apice nigris. Pedes fusco-testacei, femoribus tibiisque summo apice albidis. Alae hyalinae, nervis testaceis, anterioribus fusco-villosis."

No doubt appears to exist regarding the identity of the type series, which comprises one female and two male adults. One male has the head missing. This has been marked as a paratype and the other as the hololectotype. The female has been marked as the allolectotype. The hololectotype bears the number 5986 and the series is accompanied by two labels, not individually attached, bearing the data "Terr. Van Diem. Schayer" and "australis Er." respectively. The whole series will be returned to the Berlin Museum. A description of it follows.





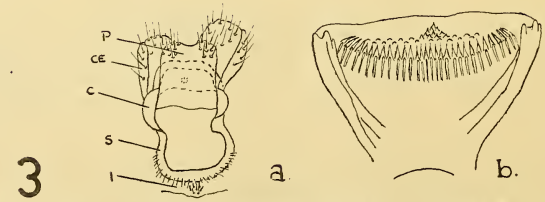


Fig. 1.—*Aëdes* (*Pseudoskusea*) *australis* (Erichson). Male palps. *a.* Type ♂. *b.* Type ♂ of *Aë. crucians* (Wk.). *c.* ♂ of *Aë. crucians* from Port Davey area. *d.* ♂ of *Aë. concolor* (Taylor) from Sydney.

Fig. 2.—*Aëdes* (*Pseudoskusea*) *australis* (Erichson). *a.* Terminalia of type ♂ in tergal view. *b.* The same in sternal view. *c.* Style of *Aëdes concolor* from Sydney showing unfurling.

Fig. 3.—*Culex cheesmanae*, n. sp. Female. *a.* Terminalia. *b.* Pharynx. *C.* Cowl. *CE.* Cercus. *I.* Insula. *P.* Post-genital plate. *S.* Sigma.

Adult ♂. The specimens are very old, faded, discoloured and in some places denuded. Characters other than structural characters are thus difficult to interpret. *Head*: proboscis mainly dark brownish but with a diffuse yellowish ring at about half-way and some scattered pale scales on both upper and lower surface anteriorly and posteriorly to this. Palps (Fig. 1) dark, about four-fifths the length of the proboscis, their apices swollen, clavate, flattened. Faint indications of pale scaling present at the articulations, especially the terminal one. Clypeus, antennal flagellum and torus apparently devoid of scales. Vertex largely covered with narrow, curved, golden scales. Upright scales golden-brown towards the front, the more posterior ones smaller and black. Broad, flat, yellow scales at sides of head. *Thorax* largely desquamated. Anterior pronotum with broad yellowish scales. Posterior pronotum with broad, flat, dark scales. Similar scales, mixed with broad whitish ones on postspiracular area and sterno-pleuron. Prealar scales present just below the knob of the latter. Mesepimeron with numerous broad, whitish scales and with a row of four stout lower mesepimeral bristles rather high up near the anterior edge. Scutum and scutellum with narrow, curved, golden and narrow, curved, dark scales. *Wings* apparently entirely dark, length about 5 mm. Knob of halteres appearing mainly dark but with a spot of pale scales. *Legs*: Front femur about two-thirds the length of the proboscis, pale below nearly to tip with a very small knee-spot. Front tibia dark except for a small apical pale patch. First front tarsal largely desquamated, others missing. Mid-femur and tibia similar to those of the front leg. Mid-tarsi dark, the claws unequal, the larger with two teeth, the smaller with one. Hind femur, tibia and first three tarsals apparently much as for the more anterior legs. Last two hind tarsals missing. *Abdomen*: Tergites with very broad whitish basal bands. Sternites mainly pale with small apicolateral spots of dark scales. *Terminalia* (Fig. 2): Style slender, curved, tapering with a more or less pronounced bulge before half-way, pilose towards the base. Terminal appendage cylindrical with cleft and slightly flared tip. Coxite long and narrow with scales on the outer surface, incompletely divided into tergal and sternal flaps, the former with numerous foliate setae on its inner edge towards the base, these becoming smaller and passing into small, curved, unmodified setae anteriorly. The inner edge of the sternal flap has a row of long unmodified setae of which the most basal is longer than its immediate neighbours and therefore conspicuous (Fig. 2*b*). Basal lobe of coxite densely pilose and with numerous somewhat flattened, recurved setae. Phallosome simple, membranous. Paraprocts (Xth sternites) with strongly sclerotized, hooked apices and each with two microsetae. Lobes of IXth tergite pyramidal, each with about seven strong setae on the inner face. IXth sternite membranous with a median group of nine long, stout setae.

Adult ♀. Proboscis appearing paler on about the basal two-thirds. Palps very short, about one-tenth the length of the proboscis or rather less. Torus and first segment of antennal flagellum with small pale scales. Front femur about three-quarters the length of the proboscis. Front and hind claws missing. Mid-claws subequal, each with a single large tooth. Otherwise much as in the ♂.

Save for the appearance of rather extensive pale scaling on the proboscis, the type series of *Aëdes australis* agrees well in its colour characters with the types and other specimens of *Aëdes crucians* and the series of *Aëdes concolor* in the British Museum. The appearance of pale scaling on the proboscis appears to have been exaggerated by fading and it is perhaps significant that Erichson did not mention it in his description. Nevertheless a definite, though less exaggerated, tendency of the same kind is to be observed in some specimens of *Aëdes tasmaniensis* in the British Museum. This is also implied in Strickland's description of this form, where he described the proboscis as "darker at the apex than at the base". By analogy with certain species of the related subgenus *Ochlerotatus* this seems likely to be a variable character. The type of *Aëdes crucians* is now reduced to thorax, abdomen, wings, and hind femur and tibia, so that a useful comparison is scarcely possible. However, none of these structures shows any characters which are at variance with the inclusion of *crucians* in the present synonymy. Edwards (1924, 1926) based his suggestion that *Aë. crucians* and

Aë. concolor should be treated as separate species on the following differences: 1, smaller size of *Aë. concolor*; 2, the swollen last segment of the male palps of this species; 3, its less swollen male style.

One of us (E.N.M.) while collecting in the Port Davey area of Tasmania found it possible to obtain intergrading series from different localities of all sizes from *concolor* up to full-sized *crucians* (wing length of ♀, 4·7–6·2 mm.). The larvae were indistinguishable from those of *Aë. concolor*, descriptions of which can be found in Woodhill and Pasfield (1941) and in Lee (1944). Despite their size the terminalia of the larger specimens appeared to be identical with those of *Aë. concolor*. In all cases except one the male palps were of the *Aë. concolor* type. In this specimen, which was pinned very shortly after emergence, the terminal segment failed to expand and instead retained the appearance considered by Edwards to characterize *Aë. crucians*. The term "swollen" as applied by Edwards to the male style is misleading, since this is not a solid object, but, like many structures in the terminalia of mosquitoes, an incompletely closed integumental tube. The appearance of increased swelling can be produced by rotation of the style into the position in which its greatest breadth is exhibited and by a slight unfurling during manipulation in a viscous mounting medium (Fig. 2*c*). In the light of this evidence we are no longer prepared to follow Edwards in treating these species as distinct. Instead, we prefer to synonymize them.

Distribution: Widely distributed along the south-east coast of Australia. The northernmost record is Fingal, N.S.W., about 10 miles south of the Queensland border (J. L. Wassell, 29:xi:1943). New Tasmanian records are South Arm (17:v:1953, E. G. Connah); Blackman's Bay (6:ii:1954, E. G. Connah); Port Davey area: Bond Bay, Coffin Creek, and coast near Trumpeter I. (—:ii:1954, E. N. Marks); Fisher I., off Flinders I., Bass Strait (22:xi:1952, J. H. Calaby and D. L. McIntosh). Lee (1944) records *Aë. concolor* from Norfolk I. Carter (1920) mentions five ♀♀ of a "probably undescribed species of *Ochlerotatus*" from Lord Howe I., captured by Mr. Laurie in a dwelling house. These specimens were loaned by the Liverpool School of Tropical Medicine to the British Museum, and represent a species of *Aëdes* (*Pseudoskusea*) closely allied to, if not identical with, *Aë. australis*, but males would be needed to determine whether they are conspecific.

Aëdes (Pseudoskusea) cairnsensis (Taylor).

Pseudoskusea cairnsensis Taylor, Proc. Linn. Soc. N.S.W., 43: 829, 1919. *Aëdes* (*Pseudoskusea*?) *cairnsensis* Edwards, *Bull. ent. Res.*, 14: 387, 1924.

The type ♀, in the collection of the School of Public Health and Tropical Medicine, Sydney, is not an *Aëdes* but a *Culex*, probably of the subgenus *Lophoceraomyia*. Determination of its identity must await a revision of the Australian species of that subgenus.

Culex (Neoculex) cheesmanae, n. sp.

Culex (*Neoculex*) *pseudomelanoconia* Williams (*nec* Theobald), *Hawaii Plant. Rec.*, 47: 217, 1943. *Culex* (*Neoculex*) *pseudomelanoconia* Laird (*nec* Theobald), *Bull. ent. Res.*, 45: 286, 1954.

This species is named in honour of Miss Evelyn Cheesman who, as a collector, has made notable contributions to our knowledge of the mosquitoes of the Australian Region and to whom we are indebted for part of the material here described.

The description is based on holotype ♂, allotype ♀, one paratype ♂, two paratype ♀♀ and six whole larvae, also marked as paratypes, from Nassirah, near Boulouparis, 50–60 miles north of Noumea, New Caledonia, —:viii:1954, bred out by Dr. M. O. T. Iyengar from "rock pools in river" and seven paratype ♂♂, five paratype ♀♀, one pupal pelt, two whole pupae and six whole larvae (paratypes) from Pueblo, near coast, 1500 ft., New Caledonia, —:ix:1949, bred out by Miss L. E. Cheesman from "rock-basins in mid-stream". Types and paratypes in the British Museum collection; two male, two female and two larval paratypes in the University of Queensland collection.

Adult ♂. A very small, jet black mosquito. *Head*: Palps and proboscis black, the palps almost exactly equal in length to the proboscis, excluding the labella, the proboscis slightly swollen distally and somewhat darker in this region than towards